GAS JOURNAL, SEPT. 2, 1942

VOL. 239 94th YEAR No. 4137

EDITORIAL NOTES

RURAL AREAS

LIMITATION of space has prevented earlier reference to the report issued by Lord Justice Scott's Committee on Land Utilization in Rural Areas—the result of ten months' deliberation and hearing of much evidence. But, since the subject is one of vital interest to our Industry, we feel it will be useful to place on record a summary of the findings, which in short constitute a five-year plan for correlating building and other constructional development in country areas with the maintenance of agriculture, the well-being of rural communities and the preservation of rural amenities. The report advocates the appointment of a non-departmental Minister of National Planning to preside over a committee of Ministers concerned with land development, and the setting up of a Central Planning Authority. The Scott Committee is concerned only with planning for the countryside in contradistinction to the town, and as an essential factor to promoting stability over the initial and difficult period of reconstruction, it considers the Government should lay down a definite agricultural and food policy for at least five years. Given such a policy, the Committee recommends the completion within the five years of (*a*) town and country planning schemes to cover the whole country, indicating areas where industrial zones are to be established and satellite towns or new settlements located ; (*b*) a building programme to overcome the present shortage of rural housing ; (*c*) a plan to provide social centres throughout the country on the lines of the "village colleges" in Cambridgeshire, with halls for smaller villages and proper playing fields ; (*d*) extension of electricity, gas, and water supplies in rural areas; (*e*) a national parks scheme, with hostels; and (*f*) determination and signposting of all footpaths and bridle paths, rules for control of access to the countryside, elimination of unsightly advertisements and petrol stations, and registration of title. Emphasizing the importance of bringing to the countryside the advantages of modern conveniences, the Committee points out that in 1938 only about 25,000 to 30,000 agricultural holdings out of a total of 365,972 were served with electricity; gas, often preferred for heating and cooking, was mainly restricted to small towns and larger villages owing to the cost of laying mains and supply pipes; and much the same picture is given in the case of rural water supplies. The improvement of rural housing is an essential pre-requisite of a contented countryside, and the Committee considers that all new houses should be so constructed as to give the tenants the option of using either gas or electricity, even if these services are not immediately available.

The findings acknowledge that the thermal efficiency achieved by the conversion of coal to gas and coke is such that not only should the use of coke stoves and fires be encouraged on that ground alone, but also as promoting a smoke-free atmosphere. Since gas is essential for certain industries there should be the closest collaboration between the Gas Industry and the planning officers, especially where the location of new industrial plant is concerned. The Committee views with approbation the growing improvement of gas distribution and the development of local gas grids, and would welcome greater uniformity of charges and conditions of supply. It believes that considerable extension of gas supplies to villages is possible, probable, and desirable, and it notes with pleasure the attention now being paid by the Gas Industry to the design of gasholders and hopes that more will be done. The Committee recommends that the Ministry of Fuel and the Ministry of Agriculture in conjunction with bodies representing the Industry and in consultation with the Central Planning Authority should examine the possibilities of extending gas supplies to rural areas and prepare plans accordingly, and considers that gas, as well as other statutory authorities, should be brought under national planning control. Much that the Committee proposes requires goodwill rather than money, and it does not consider financial arrangements to be an insuperable difficulty in any of its recommendations.

The main task of the Committee was to study the conditions upon which development should take place in country areas without harming agriculture and the well-being of rural communities, or spoiling the beauty of the countryside, and a considerable section of the report is therefore devoted to the question of the location of industries. Gas and electricity showrooms, it is pointed out, come into the same category as other shops serving the needs of rural inhabitants and as such should be sited in the small towns. The production and storage units of the gas, electricity, and water industries, however, fall into quite a different category. They are often large scale industrial units serving in some cases large cities many miles distant; indeed in some cases they are not catering at all for the rural inhabitants in the surrounding countryside. Sometimes it is necessary for production and storage units to be sited in the open countryside or in villages, for instance, where water reservoirs must be sited close to gathering grounds or when generating stations use water for their source of power. On other occasions it is well that they should be sited in villages or in the open countryside to take advantage of the economies available through being adjacent to their raw material, as for instance gas-works and electricity generating stations using coal being sited at the pithead. Although industrial units of this type are mainly unsuitable in country areas because they introduce a note of incongruity, it may at times be in the national interest for them to be so located, even though they cause harm to agriculture or spoil the beauty of the surrounding countryside. Incongruity is often due to ill-considered details of buildings, and what, in the opinion of the Committee, is clearly wrong is the present exemption of statutory undertakings from planning control. The Committee sees no justification for treating public utility undertakings differently from other enterprises undertaking constructional development, and accordingly attaches great importance to its recommendation that all such undertakings should be subject to national planning control.

The report as a whole gives a comprehensive survey of rural life as it was immediately before the war and as it should exist when the recommendations have been carried out. To delay planning and the legislation to carry the plans into effect until the time for action is at hand—the end of the war—would, in the Committee's opinion, be fatal, although of course actual post-war reconstruction will begin from the position as it will be at that time, and not as it is at this moment. Siting of factories in the open countryside or in villages is regarded as unwise, but introduction of carefully regulated industry into country towns could be beneficial. Rural trades and crafts should be encouraged. New villages and small towns, compact and modern and situated off the main roads, should be planned, and country towns which have main traffic roads running

through them should be by-passed as far as possible. New buildings in country areas should use to the full all the possibilities which new materials and new building techniques have made available, though the buildings should be designed to harmonize with their surroundings. Building in block formation is to be preferred to building in scattered detached units so far as scenic effect is concerned, and the use of materials should be controlled.

FUTURE GAS PRICING

FOR the past three years the question of methods of charging for gas which will enable the majority of people to enjoy the benefits of using gas for all domestic purposes needing heat at a cost which they can afford to pay has in the light of war circumstances been referred to only in general terms, and these in relation to the time after the war is ended. Under present conditions, with the need for fuel economy more pressing every day, our statements concerning two-part tariffs and the like have concerned announcements by gas undertakings making known their policy of refunding to two-part tariff consumers any part of their bill in excess of what would have been charged under the current flat rate. Looking to the future, however, the subject of attractive gas pricing is obviously one of major importance to the Gas Industry and the community; indeed, the "general terms" we have mentioned can have left no doubt about this. And again looking to the post-war years we welcome the Paper by Mr. A. F. Pollock, on the structure and finance of the two-part tariff, given this week to the North British Association of Gas Managers. It is based on work carried out by the Edinburgh Gas Undertaking—and the Industry owes a great deal to Edinburgh investigations in many directions and the Department's helpfulness in making the results known—and it is bound to be of special value to those who are actively planning for a post-war Gas Industry on a changed and vaster scale. This Paper, written, though with particular reference to Edinburgh, objectively, is a remarkable analysis of the problem, and will, we think, stimulate thought and prove exceedingly useful as a guide and as a reference. In saying this—and adding that it is one of the best and certainly one of the clearest Papers which we have seen on the subject for a long time—we neither hope for nor expect agreement with all the views expressed by the Author. This in face of his emphasis that in describing the investigation he made every endeavour to avoid any expression of opinion as to the merits of different kinds of tariff.

The statistics set out by Mr. Pollock in his Paper relate solely to domestic consumers, and the analysis between service charge and commodity charge—the basic consideration—has been made in the manner recommended in the report of the Committee on Gas Charges appointed by the National Gas Council in 1925. Acceptance of this analysis was followed by determination of how service costs should be distributed between the different classes of consumer, in particular domestic consumers. It was assumed, to separate domestic and non-domestic service costs, that with four times the average consumption of the domestic consumer, the non-domestic consumer could be expected to carry service costs at least 50% higher; and in this regard the Author stated that if this assumption proves inaccurate, "the inaccuracy is not material where the proportion of non-domestic consumers and their consumption is small in comparison with the total." Statistical analysis of consumers' records showed the tendency for the consumption of domestic consumers to vary with the size of the house, size being measured by the number of rooms. But this variation is neither consistent nor in direct proportion to the number of rooms, and a tentative two-part tariff with a service charge proportional to the number of rooms was found to result in an inequitable distribution, among the various classes of consumer, of the benefits of the tariff. (As to basing service charge on assessed rentals, differences in method of valuation at different times give rise to many anomalies ; and a "size of meter" basis is related more to peak consumption than to annual consumption.) The Author explained that it was considered better to distribute service costs against each size of house, not according to the number of rooms, but rather in proportion to the characteristic consumption, using model consumptions (the most common consumptions of the various classes) as "weights" for determining the unit of service charge. He stated that a two-part tariff with service charge determined in this way showed the distribution of the benefits to consumers to be "fair and equitable," and concluded that if the model consumption is accepted as the principal determining factor in the distribution of the service charge, the statistical analysis of consumers' records need not be elaborate—that all the necessary information could be obtained from a representative sampling of, say, 10% of the consumers.

Now the avowed purpose of the investigation was to elucidate the facts, from them to determine the general principles upon which to build an equitable domestic two-part tariff, and to show how this can be done scientifically and yet without the need for over-elaborate and costly statistical preparation. The question persists in our mind—we are thinking of the Industry after the war—to what extent are we justified in basing a policy of gas charging on the elucidation of facts—facts as they existed pre-war. Mr. Pollock argued thus about the service charge: "What each individual consumer ought to pay—*i.e.*, the actual cost of service to each individual consumer—is practically impossible to ascertain, but in any case such costs are largely of academic interest, because individual service charges must be related not so much to the actual as to the potential use of gas service. For instance, two houses of identical accommodation would normally require to pay the same service charge even though the existing consumptions of gas differed considerably." Sound reasoning. We agree it is unfair that because the occupier of a house identical with a neighbouring house as regards the costs of supplying gas to the entry of the meter happens to consume more gas than his neighbour he should be penalized by having to pay a higher service cost—in some way proportional to the amount of gas consumed. What we dislike is the assumption that one is justified in basing a service charge not on the actual cost of supplying gas to a dwelling but upon what the occupier could afford to pay. We regard it as bad ethics. If it costs x shillings to supply gas to dwelling A, and x shillings to supply gas to dwelling B, why should the occupier of A be asked to pay $x + y$ shillings as a service charge while the occupier of B, *because ue uses less gas*, is only asked to pay x shillings? What equity, in brief, lies in tying up a service charge with gas consumption? For similar dwellings, located in the same areas and similarly equipped, why should there not be a similar service charge? Is the elucidation of pre-war facts to serve as a basis for future policy?

This is not in any way to suggest that we have not regard for or do not believe in statistical methods—which, indeed, we think have been employed far too scantily in the Gas Industry. What we have in mind is that, post-war, we may, and probably shall, find it needful to start from new or modified premises in framing tariff policies of far greater general application over wide areas. There will probably be concentrated and diffuse housing of the population, the different methods having their bearing on gas service charges. Very likely, distribution practice will change, and with it costs will alter. Perhaps domestic gas appliances will, to some extent at any rate, be regarded and installed as an integral part of new houses or new flats, and charged for in the composite rental of the premises. Is it impossible to visualize gas distribution systems some of the payment for which will in the first instance be met by municipal or regional authorities? Again, is the idea of supplying gas at a standard charge as a proportion of the rent or of the rates beyond the realm of commonsense or of practical post-war policy? Possible developments such as these—we do not intend to elaborate them here—are sure to influence the formulation of tariffs. In particular we hope the future will see more cleavage and greater distinction between service charge and commodity charge.

Battle for Fuel

"Battle Order Number One" has now been issued to all managers and staffs of gas and electricity undertakings by Commander Stephen King-Hall, M.P., Director of Publicity, Ministry of Fuel and Power.

"I assume," he says, "that I may regard you as the Battalion, Company, and Platoon Commanders in the Battle for Fuel, and that your showrooms can be considered as Battalion Headquarters all over the country. It is of urgent importance that the public should be trained at once to read their meters and start keeping weekly records of consumption. Request your immediate co-operation in pressing forward with all your resources and imagination with this Battle Order Number One. Thank you for your help to date."

Personal

In consequence of ill-health, Mr. D. MORTON, Engineer and Manager of Arbroath Corporation Gas Undertaking, has intimated his intention of retiring from a position which he has held for ten years. Arbroath Town Council have accepted his resignation with much regret.

* * *

Mr. W. R. TAYLOR, Assistant Engineer of the Rotherham Corporation Gas Undertaking, has been appointed Engineer and Manager at Porthcawl. Mr. Taylor has been at Rotherham for the past 6½ years, and was previously for 13 years on the Technical Staff of the City of Stoke-on-Trent Gas Department.

* * *

Mr. S. HENSHAW, F.I.C., has retired from the Chairmanship of the National Benzole Co., Ltd., which position he has held since the formation of the Company some twenty-three years ago. His extensive knowledge of the benzole industry will, however, still be available, as he retains his seat on the Board of Directors. Mr. J. H. OLLIVER, who has been a Director of the Company since its inception, has been elected to succeed Mr. Henshaw as Chairman.

* * *

Mr. F. M. PATERNOSTER, well known to many in the Gas Industry, has been appointed Fuel Overseer to the Felixstowe district.

* * *

The engagement is announced between Mr. OSWALD T. LONGDEN, Deputy Engineer and Manager, Stirling Gas Light Company, and Miss Dorothy M. Cuthbert, daughter of the late Mr. Arthur Cuthbert, and Mrs. Cuthbert, Stirling.

* * *

The many friends of Mr. H. BELL THOMPSON will be interested to learn that 1942 marks his fiftieth year of association with Sternol, Ltd., of which he is the Managing Director, and to mark his golden jubilee a presentation is being made to him by the Company. He joined Sterns, Ltd. (the parent Company), as a junior in 1892, and became General Manager and a Director of the Company. On the formation of Sternol, Ltd., in 1928 he was appointed Managing Director of that Company, retaining his Directorship on the Board of Sterns, Ltd.

Obituary

Mr. WILLIAM L. HEALD, who has died at the age of 63, was Assistant Gas Engineer at Preston until his retirement from that position in 1940.

* * *

The death has occurred at his home at St. Andrews, at the age of 81, of Mr. JOHN MELVILLE MORRIS, a Director of St. Andrews Gas Company, Ltd.

* * *

The death occurred on Aug. 6, at his home in Ealing, of Colonel FORRESTER CLAYTON, D.L., J.P., at the age of 63. He was Chairman of Messrs. Thomas Clayton (Oldbury), Ltd., Brentford and Oldbury, lightermen and carriers of liquids in bulk, who are well known to the Gas Industry in London and Birmingham. Colonel Clayton was an authority on all matters relating to transport, and was a member of the London Passenger Transport Board.

* * *

It is with regret that we record the sudden death on Aug. 20 of Mr. J. H. WILLIS, A.M.I.Mech.E., at the early age of 55. Mr. Willis entered the service of the City of Birmingham Gas Department in 1912 as a draughtsman at Nechells Works. During the last War, when the first toluene plant is the country was installed at Nechells Works, Mr. Willis assisted with its erection and later, under the Ministry of Munitions, did much similar work throughout the country. In 1924 he left the Birmingham Undertaking to join Messrs. Alexander Comley Ltd., Birmingham, who are agents for Messrs. Clayton, Son & Co., Ltd., Leeds, and Messrs. Clapham Bros., Ltd., Keighley, and in 1940 was appointed a Director of the Firm.

Mr. Willis was well known throughout the Gas Industry and will be very much missed by his many friends.

1942 "Journal" Directory

Page 68. THORNTON CLEVELEYS. G. Fitton, *E. & M.*, *vice* W. J. Shelley.

Letter to the Editor

A Gas Training College

DEAR SIR,—My attention has been drawn to the letter from Mr. Thomas Smith published in a recent issue. He is evidently not fully informed of the work done for many years past at this Institute in co-operation with the training department of the Gas Light and Coke Company at Watson House. While it is true that the rather high-sounding title "Gas Training College" has not been used, part of the considerable extensions to this Institute which were proceeding just before the war was intended to be devoted to the training of all types of personnel for the Gas Industry.

The advantage of a local authority, such as the London County Council, operating such a scheme is that the co-operation of all gas undertakings is very much welcomed, and past experience shows that in certain instances, as the one I quote above, this co-operation has been of a very valuable, extensive, and long-standing character, in respect of both day and evening students.

In regard to Mr. Smith's last few paragraphs, in the main, technical colleges throughout the country have not, in any respect, limited capacity; indeed, one of the problems is to use to the full capacity which is already availabie; further, such schemes of instruction cannot be complete unless they deal fully not only with academic but with the practical aspects of the Industry.

The question of residence is a difficult one, and as the Industry is at present distributed it would seem wiser to arrange the matter by District Committees in a similar manner to the present procedure in connexion with The Institution of Gas Engineers' examinations.

Finally, the real problem in technical education is to secure a sufficient measure of co-operation from employers to release personnel for training in the daytime. Knowing the difficulties surrounding this problem, one wonders what the reactions of the Industry would be to the release of personnel for residence at a distant college.

You will observe, Sir, that I do not mention the financial implications involved, but they may be taken as highly important.

Yours faithfully,

J. N. LONG.

Westminster Technical Institute,
Vincent Square, S.W. 1.
Aug. 20, 1942.

"The Gas Industry of the Future."

It has been suggested to us that a reprint of these articles, when they are complete, would be valuable to many for permanent reference. Owing to paper scarcity it would be necessary for us to have some idea of the demand before proceeding, and we shall be glad to have a post card from anybody interested. Single copies would not be likely to cost more than one shilling.

The Plymouth and Stonehouse Gas Light and Coke Company will pay, on Oct. 1, interest on Debenture Stocks for the half-year to Sept. 30, as follows: 3% on 3% Stock; 3½% on 3½% Stock; 4% on 4% Stock; 5% on 5% Stock; all less Income Tax at 10s. in the £1.

The Central Executive Board of the National Gas Council will meet at 2 p.m. on Tuesday, Sept. 8, at Gas Industry House.

The Executive Committee of the London and Counties Coke Association will meet at 11 a.m. on Sept. 21, at Gas Industry House, and the Central Committee at 11.45 a.m. The Annual Luncheon will be held at Grosvenor House, Park Lane, W. 1, at 1 o'clock for 1.15 p.m., followed by the Annual General Meeting at 2.45 p.m.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

THE GAS INDUSTRY OF THE FUTURE.—4.

HOW LONDON TRANSPORT AND THE MAIN LINE RAILWAYS WORK

The Gas Industry has a great future, but it is generally agreed that it must face radical changes; that it must form opinion within its ranks; and that it must work out its own salvation—or accept the consequences of neglect. To help the Industry to decide which way it wants to go the "JOURNAL" has studied the experiences of other public utility services which have been confronted with similar problems in recent years. The following is the fourth of a series of articles in which an effort is made impartially to review some of the principal schemes of rationalization in the other industries, with their possible lessons for the Gas Industry. The series covers water supply, passenger transport, the main line railways, port and dock authorities, broadcasting, and the electricity industry.

THE LONDON PASSENGER TRANSPORT BOARD

THE London Passenger Transport Board—now commonly shortened to London Transport—is Britain's outstanding example of public utility regionalization. Only a few years ago there were hundreds of independent bus companies operating in the 2,000 sq. miles which now comprise the London Passenger Transport area; municipal and company owned tramway systems were running without any co-ordinated plan, and even the Tube railways, developed as they were by several separate companies, were built without any complete attempt to facilitate interchange from one line to another. The main line railway companies, reduced in number from about a score to four in 1923, were meeting with unrestricted road competition on their suburban routes, and newly developed suburbs were crying out for transport facilities which no single undertaking could afford to provide. In the twelve years that preceded the creation of London Transport there had been a good deal of grouping of company undertakings, and the tramways had established a number of through services over the lines of neighbouring concerns, but neither the London Traffic Combine, as it was then known, nor the London County Council as the chief partner in the municipal group, was able to cope adequately with London's growing demands for properly planned passenger travel, and Parliament decided to take a hand in producing some kind of order in place of chaos by securing unification under public control of passenger transport and eliminating uneconomic and unnecessary competition.

Haphazard Growth

Neither exclusively municipal, nor purely private company, administration would have been possible for so vast an undertaking, so Parliament adopted the highly successful experiment of a public corporation. London Transport has been described as the accepted model of the Labour Party and the Trade Unions for the organization of socialized industry, but its creation cannot be credited to any one political party, for, although the Bill under which it was ultimately constituted was introduced while a Labour Government was in office, it was conducted through its various stages by two Liberal Ministers of Transport in a National Coalition Government, and became law while a Conservative Government was in office. The two names most closely identified with the negotiations leading up to London Transport were those of Mr. Herbert Morrison, the Labour Minister of Transport and leader of the Labour Party in the London County Council, who introduced the Bill in Parliament, and Lord Ashfield, then Chairman and Managing Director of the London Traffic Combine, and now Chairman of London Transport itself. Mr. Morrison wrote a book, *Socialization and Transport*, in which he referred to the Board as the result of a search for a "combination of public ownership, public accountability, and business management for public ends."

London's first railway was built in 1836, the London General Omnibus Company began operating buses in London about 20 years later, and the Tube railways were subsequently developed by separate companies. The Underground Electric Railways Company of London, Ltd., was incorporated in 1902, and in the same year obtained financial control of the Metropolitan District Railway. It constructed the Bakerloo, Piccadilly, and Hampstead Tubes (which were opened in 1906 and 1907), and held a controlling interest in the three companies owning them from the beginning. These three tube companies amalgamated as from July 1, 1910, into the London Electric Railway Co. In 1913 the Underground Company obtained financial control of the City and South London and the Central London Railways. The Metropolitan Railway, which regarded itself more as a main line company than the rest, remained outside the combine and only lost its separate identity when it came into London Transport in 1933. In 1912, the London General Omnibus Company came under the control of the Underground Company, and by 1914 the L.G.O.C. had either absorbed or established working agreements with nearly all the private omnibus companies then operating in the Metropolis. Ten years later there was renewed competition from a large number of independently owned omnibus undertakings, but the London Traffic Act, 1924, enabled the L.G.O.C. to resume its policy of absorption. Of the 5,000 London buses then running, 556 were owned by 197 independent proprietors, and by the process of absorption the independents were reduced by the end of 1930 to 200 vehicles owned by 54 companies. While the railways and buses were developed under private ownership, the tramways were owned and operated to a large extent by the local authorities, chiefly the London County Council. At the time of the great amalgamation, the County Council owned some 167 miles of tramway track out of the total of 328 miles throughout the London Transport area. Eight local authorities outside the county owned tramway services, and one or two more owned systems which were operated either by other local authorities or by private companies.

Immediately before London Transport was created there were in London nine railway companies (four main line, four in the Underground group, and the Metropolitan), 61 omnibus companies (London General with its five associated companies, and 55 independents), about 21 motor coach companies and 16 tramway undertakings (13 municipal and three private undertakings associated with the Underground group). The Board, which in 1939 employed some 86,000 people and owned nearly 13,000 passenger vehicles, was established by the London Passenger Transport Act, 1933, and the appointed day for it to take over the whole of London's transport operation was July 1, 1933, but certain of the undertakings did not come completely under its control until a few months later.

Organization of the Board

The Board comprises a chairman and six members who are selected neither by the municipalities nor by the shareholders of the absorbed companies, but by a body called the "Appointing Trustees," consisting of the Chairman of the London County Council, a representative of the London and Home Counties Traffic Advisory Committee, the Chairman of the Committee of London Clearing Bankers, the President of the Law Society, and the President of the Institute of Chartered Accountants in England and Wales. By way of comment on the disinterestedness of the "Appointing Trustees," it might be mentioned that, at the time they were designated, the President of the Law Society was a Bristol solicitor and the President of the Institute of Chartered Accountants was a Bristol accountant. For filling vacancies, the Chairman of the Board or another member of the Board for the purpose sits with the Appointing Trustees. Appointments are made by the Appointing Trustees after consultation with such persons as they think fit. Meetings of the Appointing Trustees are convened by the Minister of Transport, and questions are decided by majority; three members form a quorum. Members of the Transport Board must be persons of "wide experience and have shown capacity in transport, industrial, commercial, or financial matters or in the conduct of public affairs," and in the case of two members they must have had not less than six years' experience in local government within the London Transport area. They are appointed for not less than three years or more than seven (but are eligible for re-election) as the Appointing Trustees may determine. A member may resign on giving notice to the Minister of Transport, and the Minister has power of removal under certain specified conditions. Members of the Board must have no financial interest in the undertaking other than by way of their fees or salaries, which are fixed by the Minister in consultation with the Appointing Trustees and with the consent of the Treasury. Mr. Morrison remarks in *Socialization and Transport* that "representation of shareholders would have been inconsistent with the public nature of the London Transport Board, and would, to whatever extent it was applied, convert the public corporation into something very much like a private company. . . . To elect one, or even two, persons from among the 168 local authorities was bound to be unsatisfactory and undemocratic, and would provide no certainty of producing the right men. If the right had been conferred on the London County Council alone, it might have pleased the Council, but it would have set all the other councils up in arms."

Results of Co-Ordination

The complete co-ordination of passenger transport in London has had too many advantages to be enumerated here. It has enabled the Board to plan facilities for the area as a whole, to standardize fares, carry out great extensions of electric railways into new and hitherto inadequately served suburbs, and provide better interchange facilities, such as those at Kings Cross, where three separate stations have been merged into one, and at Holborn, where a very inconvenient street crossing between Holborn and the old British Museum station has been eliminated through the construction of a single station. Another advantage was the development of trolley buses. Some 60 trolley buses were working in the London area before the Board was established. If transport had remained in the hands of individual boroughs there would to-day be a strange mixture of passenger vehicles on the streets.

A major scheme of developments involving a capital expenditure of roundly £40 million was embarked upon by the Board in 1935 in collaboration with the main line railway companies. Such a scheme would not have been practicable if the Board had not been set up, so bringing together in one administrative and financial unit the whole of the local passenger transport facilities in the London area, other than the suburban services of the main line companies. Up to the end of 1941 the Board had borrowed £28,271,658 from the London Electric Transport Finance Corporation, Ltd., to finance its expenditure in connexion with this big programme of works.

The creation of the London Passenger Transport Board involved the largest transfer from private and municipal to public ownership ever effected in this country, and apart from the Post Office, London Transport is now the biggest publicly owned undertaking having direct business with "consumers." It was the first corporation modelled on the capitalist public company with financial autonomy and with no direct representation in the Central Government. To secure the proper co-ordination of the Board's services with the suburban services of the main line railways a standing joint committee was established consisting of eight members—four appointed by the Board and one each by the four main line companies. This standing joint committee was the machinery for preparing the development scheme just referred to.

Financial Structure

The passenger receipts of the Board and the passenger receipts of the main line railway companies attributable to journeys between any two stations within the London Transport area, and in certain cases outside the area, subject to certain adjustments were, prior to the present war, pooled in agreed proportions. The nominal capital of the Board is about £112,000,000, divided into five classes of stock, of which four are fixed interest bearing securities redeemable within a period not exceeding 90 years. The fifth class—London Transport "C" stock—is in the nature of an equity stock but subject to a maximum rate of interest. The rate paid may be anything up to 6%. The Act specified the classes of stock, and the amounts, to be paid to certain undertakings, including the London County Council and three other local authorities with which settlement had been reached, as consideration for the transfer. The other local authorities involved, with two exceptions, received as payment for the transfer of their undertakings the assumption by the Board of the liability to pay to them from time to time sums sufficient to enable them to discharge their loan obligations in respect of those undertakings outstanding at the date of the transfer.

The securities of the privately owned undertakings were simply exchanged for the securities of the Board, and the sole rights granted to the holders of any class of London Transport stock were those of receiving their interest payments, and in case these were not forthcoming, to apply in accordance with certain conditions for a receivership. Without going into matters of high finance, it should be noted here that the Board has, from its inception, been burdened by the excessive consideration which it had to pay for the undertakings it acquired, and it has often been urged that it should receive some form of Government support in connexion with the payment of interest on the "C" stock. For a generation at least the stock issued as consideration must continue to represent a large part of its capital liabilities. Before the war, taxation alone was costing the Board some £2,900,000 (1938/39) a year, in addition to income tax.

THE MAIN LINE RAILWAYS

Twenty years ago the railways were faced with circumstances analogous to those of the Gas Industry to-day. There was multiplicity of agencies by reason of the great number of railway companies then functioning; according to their customers, their systems of charging needed overhauling; and the industry as a whole was faced with a new and vigorous competitor in road transport. In the last war as in the present one, the railways were taken over by the Government, and it was when they were returned to ordinary commercial management in 1921 that the opportunity was taken to re-adjust the relations of the railways to one another, to their employees and customers, and to the State. Minor amalgamations had been effected in earlier years, and on Jan. 1, 1923, the 120 companies then operating were compulsorily combined under the Railways Act, 1921, into one or other of the four main line groups. The amalgamation involved many difficult problems of reorganization, the re-alignment of competitive interests, the re-casting of traffic operation and working, and a good deal of standardization of plant and rolling stock. Staff problems took some time to adjust themselves, and the advantages anticipated by the promotors were not immediately realized. It was some years before the full effects were felt, partly because of the disturbances in national affairs in the early years, and partly because of the need for additional capital expenditure on improvements.

Grouping did not eliminate competition; it re-aligned it among the four companies. The 1921 Act did not allow the companies to pool traffic among themselves without the express consent of the Minister of Transport, but in 1932–33 sanction was given to various schemes of traffic pooling among three of the groups on competitive routes. A different sort of pooling arrangement came about in 1933, when approval was given to the pooling of passenger receipts between the London Passenger Transport Board and the suburban routes of the four main line railways.

Under the 1921 Act the Railway Rates Tribunal was set up as a judicial body with extensive powers of regulating rates, fares and other charges, and a complicated classification of merchandise into 66 classes was introduced in 1928 in place of the old rigid system of maximum rates. The Tribunal is required each year to review the position and adjust the rates in relation to standard revenue. Machinery was set up under the Act for dealing with labour problems on a national scale. The Boards of the railway companies are constituted on ordinary commercial lines, the shareholders electing the Directors and the auditors. The chief officer of each company is the general manager, who, unlike his counterpart in the average commercial concern, has a general oversight over all the other chief officers of his company. Generally speaking, the staffs and employees of the old separate companies were merged into the main line groups, a condition of all railway service being that an employee is liable to be drafted to any part of the system. There was, however, a big reduction in the number of railway company directors. Assuming an average board of eight to ten members (the average for the present companies is somewhere between 12 and 20), the total must have been reduced from a thousand or more to somewhere around 60.

The Railway Clearing House, established by Act of Parliament 100 years ago, continues to deal with matters affecting the common interests of all the railways, including the London Passenger Transport Board, and there is a small but important Railway Companies' Association, consisting of meetings of the Chairmen and General Managers of the companies, dealing with questions of high policy.

At the end of the last war the railways, restricted in many respects as regards fixing of rates, were confronted with enormous and almost unrestricted competition from road transport. The railways themselves had no power to operate road transport until 1928, and even then restrictions and regulations were applied to railway-owned road transport. The Road and Rail Traffic Act, 1933, applied a licensing system to goods vehicles and set up area licensing authorities in various areas. Goods vehicles were divided into three classes: Carriers' vehicles, requiring an "A" licence; vehicles used by firms for carrying their own goods, requiring a "C" licence; and vehicles used for a firm's own traffic and also, on occasion, to carry for hire, requiring a "B" licence. Latest available figures show there are 65,000 firms operating 150,000 vehicles under "A" and "B" licences, and 175,000 firms operating 365,000 vehicles under "C" licences.

In the case of passenger traffic, the railways effected financial agreements with most of the large road transport companies, but competition still prevailed. In the case of goods traffic, the railways invested only in a few well established road haulage concerns, and established road services of their own, to the extent of about 10,000 vehicles. Competition from road transport led to the "Square Deal" campaign of 1938, when the railway companies sought to obtain relief from out-of-date restrictions on the quotation of merchandise rates. Road hauliers, they pointed out, could quote what charges they liked without incurring any obligation to grant similar rates to other traders or even to repeat the bargain, and they asked for a short Act of Parliament to give the railways the freedom enjoyed by other forms of transport. Three years ago the Transport Advisory Council recommended a relaxation of the existing statutory control of railway goods charges, approved proposals for consultations between railways and traders, and recommended that effect should be given to proposals in an agreement between the railways and the road haulage industry that "agreed charges" (not necessarily the same for the two industries) should be referred to a Tribunal for approval, and should then be made binding on the railways and all road hauliers. The Government accepted the recommendations in principle, and but for the war appropriate legislation would probably have been introduced before now. As matters stand at present, the whole of the railways are controlled by the Government through the Railway Executive Committee, operation remaining with the individual organizations.

[*See note on p. 351*]

THE STRUCTURE AND FINANCE OF THE TWO-PART TARIFF*

By A. F. POLLOCK, M.A., B.Com., C.A.
EDINBURGH

Introductory

THE need for promotional tariffs to improve the competitive position of gas in relation to other fuels was becoming more and more widely recognized in the Gas Industry in the inter-war years. But practice lagged behind theory, and most gas undertakings were hesitant about making fundamental changes in their price structures. This hesitation arose partly from differences of opinion as to the best form of promotional tariff, but mainly on account of statutory provisions, affecting the methods of charging for gas, which make it illegal to levy a compulsory minimum service charge on all consumers. Were this restriction removed it is perhaps a reasonable assumption that the two-part tariff would, within a short space of time, become the standard method of charging for domestic gas throughout the country. So long as it remains—and the negotiations preceding the passage of the 1934 Gas Undertakings Act encouraged no hope of its early removal—the Gas Industry is left with two principal alternative methods of charge, the block or step systems, or the optional two-part tariff.

With the former, the first block could legally be priced at such a high rate as to recover service costs from even the smallest consumer, but in practice this is rarely, if ever, possible.† Under the two-part tariff system it is only the consumers who will derive immediate benefit who will adopt it in the first instance. Upon the first introduction, therefore, of either system of charge it is generally necessary to retain the existing rates to small consumers, and to make some immediate sacrifice in revenue to offer rates which will be really promotional in the eyes of larger and potentially larger consumers. Any management convinced of the need for and effectiveness of promotional tariffs could regard the financial sacrifice with equanimity provided the probable extent of the loss of revenue could be determined and controlled with reasonable accuracy in advance.

This Paper is an account of a statistical investigation conducted by the Author for the Edinburgh Corporation Gas Undertaking with the primary object of finding out whether a sound and attractive promotional two-part tariff could be offered to domestic consumers without excessive reduction in gas revenues. The statistics compiled included non-domestic consumers, but the subject of non-domestic tariffs has been advisedly excluded from the scope of this Paper, because they do not lend themselves to the same kind of statistical treatment owing to the great diversity in the circumstances under which gas and competitive fuels are used.

Analysis of Net Expenditure Between Service Charge and Commodity Charge

Appendix 1 shows an analysis between service and commodity of the net expenditure of the Edinburgh Corporation Gas Undertaking for a pre-war year, resulting in a service charge of 26s. per consumer per annum, and a commodity charge of 3.7d. per therm. This analysis has been made in the manner recommended in the Report of the Committee on Gas Charges appointed by the National Gas Council in 1925.

Distribution of the Service Charge Between Various Classes of Consumer

With regard to the service charge, it should be borne in mind that this is only the mean cost of service to all consumers, including industrial and commercial. It is not to be supposed that under a compulsory two-part tariff scheme every consumer would pay the same service charge. What each individual consumer ought to pay—*i.e.*, the actual cost of service to every individual consumer—is practically impossible to ascertain, but in any case such costs are of largely academic interest, because individual service charges must be related not so much to the actual as to the potential use of gas service. For instance, two houses of identical accommodation would normally require to pay the same service charge even though the existing consumptions of gas differed considerably. It follows that non-domestic consumers whose average consumption is about four times the domestic average‡ could be expected to meet a higher service charge. This is not to be taken as implying that service costs vary directly in proportion to gas consumption, because it is fundamental to the whole concept of the two-part tariff that the ratio of service costs to consumption diminishes rapidly as consumption rises. The rate of diminution is of necessity difficult to determine; it is unlikely to be constant for every consumer and will vary according to circumstances. It is assumed, however, for the purposes of this investigation, that non-domestic consumers with four times the consumption could on the average be expected to meet service charges at least 50% in excess of domestic charges. With some 12,000 non-domestic consumers this would have the same effect as sharing the total service costs with a further 6,000 consumers, which would bring the average service charge to be met by domestic consumers down from 26s. to 24s. 8d. per annum. This average must be further adjusted among domestic consumers themselves according to potential consumption. Throughout this investigation, potential consumption bears some relation to the number of rooms per house, and the average number of rooms per house was found to be about 3.5. The mean annual service charge per room would therefore be in the region of 7s. Details of a tariff using this service charge are shown in Appendix 2.

It will be seen that the figures so far given have been arrived at from information which can be readily obtained as a by-product of the ordinary process of meter reading and accounting—viz.:

(1) A dissection of the accounts as between service charge and commodity charge.

(2) The total number of domestic consumers and the number of rooms in each house.

(3) The total number of non-domestic consumers and their average consumption.

APPENDIX NO. 1.—ANALYSIS OF ACCOUNTS. TO GIVE UNIT COSTS FOR TWO-PART TARIFF.

	Revenue Account Totals.	Service. %	Service. Amount.	Commodity. %	Commodity. Amount.
	£		£		£
Manufacture.					
Excluding Repairs and Maintenance Works	251,489	—	—	100	251,489
Repairs and Maintenance Works	40,620	20	8,124	80	32,496
	292,109	—	8,124	—	283,985
Distribution.					
Salaries and Wages, Meter Readers	10,282	100	10,282	—	—
Repairs and Maint., Gasholders	4,483	50	2,241	50	2,242
" " Mains	20,563	80	16,451	20	4,112
" " Meters	14,219	100	14,219	—	—
Sale and Fitting Cookers	6,906	100	6,906	—	—
Comm. Advertising, &c.	3,561	100	3,561	—	—
Distribution and Transport	9,671	100	9,671	—	—
	69,685	—	63,331	—	6,354
Rent, Rates, &c.					
Rents	364	50	182	50	182
Rates	27,637	50	13,818	50	13,819
Insurance	943	50	471	50	472
National Insurance	2,867	50	1,434	50	1,433
Workmen's Compensation	316	50	158	50	158
	32,127	—	16,063	—	16,064
Administration.					
Salaries	14,217	60	8,530	40	5,687
Printing, &c.	2,248	60	1,349	40	899
General Establ. Charges	5,483	60	3,290	40	2,193
Motor Cars	907	60	544	40	363
General Expenses	5,000	60	3,000	40	2,000
Collection	6,500	100	6,500	—	—
Law and Parliament	326	60	196	40	130
Valn. by Assessor of Public Undertakings	142	60	85	40	57
Loan Expenses	938	50	469	50	469
	35,761	—	23,963	—	11,798
Superannuation, &c.	11,146	50	5,573	50	5,573
Bad Debts	1,151	—	—	100	1,151
Interest	31,010	50	15,505	50	15,505
Income Tax	21,851	25	5,463	75	16,388
Sinking Funds	63,448	50	31,724	50	31,724
Gross cost of Gas	558,288	—	169,746	—	388,542
Less Residuals	132,280	—	—	100	132,280
Rentals, &c., of Appliances	4,259	100	4,259	—	—
	136,539	—	4,259	—	132,280
Net cost of Gas	421,749	—	165,487	—	256,262

	No. of Customers.	Sales.
Total Units of Service	128,000	3,500 mill.
	Per Customer.	Per 1,000 cu.ft. and per Therm.
Unit Costs	26s.	1s. 5½d. 3.7d.

* From a Paper to the North British Association of Gas Managers.

† *Vide* attempt by South Metropolitan Gas Company to raise the price against the small consumer in 1936.

‡ This comparison refers only to Edinburgh in pre-war years and should not be regarded as of general application.

It is not difficult, therefore, to construct a compulsory two-part tariff with service charge of 7s. per room per annum and a commodity charge of 3.7d. per therm, which would yield in revenue the total net cost of producing and supplying gas to domestic consumers. It is unlikely, however, that such a tariff would be either equitable or promotional, because the capacity to consume gas does not vary exactly in proportion to the number of rooms. For example, a bedroom with a gas fire for occasional use is not likely to account for such a high consumption as the kitchen (or living-room with kitchenette) which has a gas cooker in regular use. This suggests that a service charge based upon a flat rate per room is likely to be defective in practice, and this point is one to which more detailed reference will be made at a later stage.

Statistical Requirements for the Construction of Optional Tariffs

When any attempt is made to devise an optional (as opposed to a compulsory) two-part tariff, the need for analytical statistics of consumers and consumptions is immensely greater. It must generally be assumed, under an optional tariff, that (1) only those consumers whose consumption of gas exceeds the critical consumptions at which the two-part tariff becomes cheaper will elect to adopt the tariff; (2) the consequent possible loss of revenue to the undertaking cannot be wholly made good by an increase in the price of gas to those consumers who do not adopt the tariff.

An optional tariff should correspond if possible to the theoretically correct tariff. Whether it can so correspond depends upon the amount of the financial loss entailed and upon the funds available to meet it. Means must therefore be found for determining with reasonable accuracy the extent of the financial loss. This could be found by taking every individual consumer's account and finding the difference between the charge on the existing scale and under the proposed two-part tariff. The total of the differences in favour of the consumer would be the total potential loss to the undertaking. This method has two obvious disadvantages. First, it is a laborious and lengthy process when the number of consumers is large, and, secondly, if the potential loss is greater than the undertaking can bear, the tariff will have to be adjusted and the whole work repeated until, by a process of trial and error, a practical tariff is determined.

A more practicable method, and one which will give reasonably accurate results, is to classify all domestic consumers according to the size of the house, and group each class according to the amount of gas consumed, tabulate the resulting figures, and show against each group the total consumption of all the consumers in the group with progressive and percentage columns. The tables can then be used to calculate the revenue which would be obtained under different tariff systems. This was the method adopted for the present investigation. But even this method entails much labour, and cannot generally be undertaken in a reasonable time by existing staff and machinery. A small staff with specialized statistical machinery operating on the punched-card system was therefore employed temporarily for the purpose.

The Measure of Potential Consumption

There are certain objections to using the number of rooms as an indication of potential consumption, the most obvious being that the size of the rooms may vary. But the variation may not be so material as is often supposed; it will be seen from Appendix 2 that two, three, and four-roomed houses represent about 85,000 out of a total of 116,000, or over 70%, and in this smaller type of house the variation in the size of rooms is not normally so great as seriously to affect the value of the room measure of potential consumption. In any case, the number of rooms in a house is information which is readily obtainable by the meter reader in the course of his quarterly inspections, and it was thought that the objections to alternative methods had at least equal validity. These methods and their disadvantages may be briefly stated as follows:

(1) Floor Space or Cubic Capacity: This, though probably the best measure, is difficult to determine for every house in the area of supply.

(2) Assessed Rental: Differences in method of valuation at different times have given rise to many anomalies.

(3) Size of meter: This is related more to peak consumption than to annual consumption.

It will be shown later that neither the room measure nor any one of the other three mentioned in likely by itself to be quite satisfactory.

(To be continued)

APPENDIX NO. 2.—PRELIMINARY TWO-PART TARIFF. BASED UPON THE ANALYSIS OF ACCOUNTS SHOWN IN APPENDIX NO. 1, and OF CONSUMERS' RECORDS.

Size of House. Rooms.	Number of Houses.	Total Rooms.	Annual Service. Charge per House.	Commodity Charge per Therm.
1	5,882	5,882	7/-	3.7d.
2	32,456	64,912	14/-	
3	32,909	98,727	21/-	
4	19,963	79,852	28/-	
5	9,802	49,010	35/-	
6	5,050	30,300	42/-	
7 and over	10,042	70,294	49/-	
Totals	116,104	398,977	—	—

Average annual service charge per domestic consumer, 24/8d.

Average number of rooms per house $\frac{398,977}{116,104}$ (say) 3.5.

Service Charge per Room $\frac{24/8}{3.5}$ per annum, 7/-.

The commodity charge of 3.7d. per therm compares with the overall average price on the then existing block and step scale of 6.78d. per therm, with the price to ordinary consumers for the first block of 47.5 therms of 6.947d. per therm, and with the price to prepayment consumers of 7.92d. per therm.

Increased Capacity in Water Gas Sets*

By R. J. HORN,

Central Hudson Gas and Electric Corporation

WHERE increased capacity of water gas plants is important and construction materials are scarce, attention is naturally invited to possibilities of capacity increase in existing water gas generators. The inside diameter of the generator largely determines the capacity of the set, provided an ample supply of air is available and other facilities are adequate.

To increase the inside diameter of generators, thin silicon carbide linings have been used in some sets by the Central Hudson Gas and Electric Corporation since 1938. By this means, the area of the fuel bed section of generators formerly lined with clay has been increased with greater than proportionate increase in the capacity of the sets. Four generators on this property ranging in size from 7 ft. 6 in. to 11 ft. 0 in., lined with thin walls, are giving complete satisfaction. An 8 ft. 0 in. generator with thin-walled silicon carbide lining is giving a capacity of 112,000 cu.ft. per hour, which is 40% above the manufacturer's normal rating for this sized machine.

Thin linings are particularly applicable in standby plants and in sets operated for peak loads where additional marginal capacity is important. Under these conditions, the inside diameter may be increased six inches or even more with silicon carbide inner face walls.

In some sets, the generator capacity resulting from thin walls may exceed the carburetting capacity of the set. Oil introduced into the generator will give additional total carburetting capacity and bring the generator capacity and the carburetting capacity of the set into balance.

Several types of walls have been used by Central Hudson. In all types the inner face walls have been of silicon carbide. Insulating firebrick material of light weight and low thermal conductivity used behind silicon carbide in the wall construction minimizes the heat losses through the wall.

The silicon carbide wall may be of standard circle brick or special shapes tongued and grooved both ways. With standard silicon carbide circle brick occupying 4½ in. of the wall thickness, all the reduction must be had in the other wall materials; whereas with only 2½ in. or 3 in. of the wall occupied with tongued and grooved silicon carbide blocks there is more possibility of increased generator cross section without risk of increasing the shell temperatures.

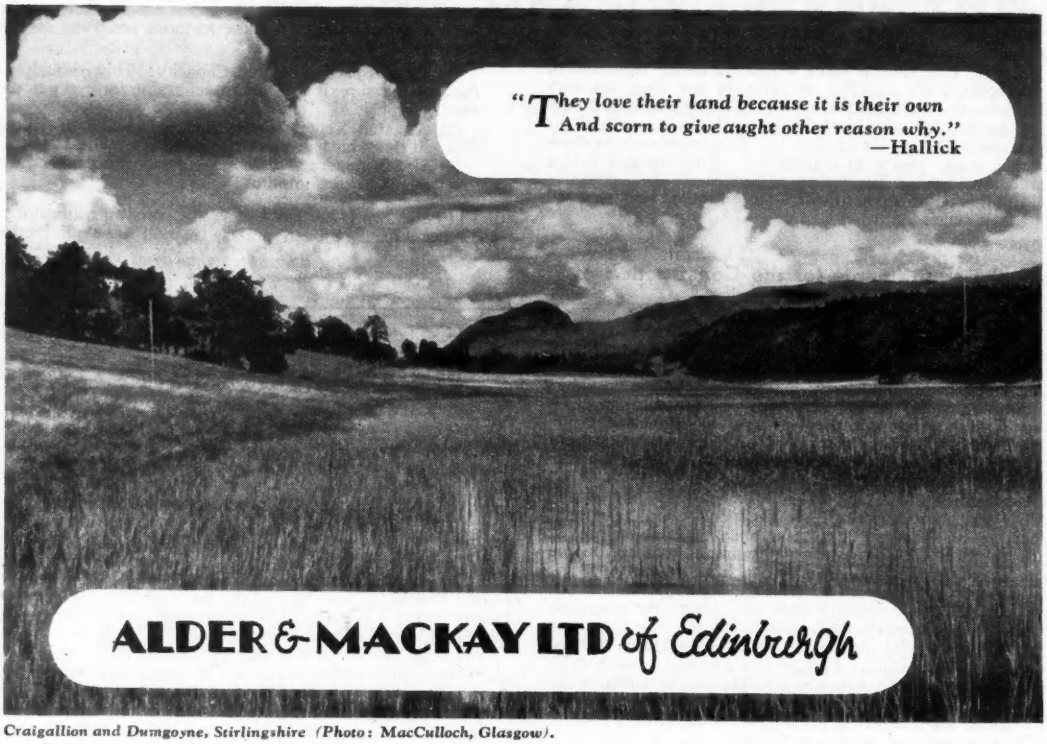
Water jackets are a possibility with walls which transmit too much heat.

Thin linings appear to have a life expectancy well beyond that necessary to justify their cost. One generator with 2½ in. thick silicon carbide has had 1,740 operating hours and has been on standby service with an active fire for an additional 2,000 hours. The face of these blocks shows little erosion and there is no evidence of clinker adhesion having torn away any of the wall. Thin walls in intermittent use at a standby plant have been in service for over four years, with the apparent result that not over 20 or 25% of the life of the lining has been spent.

There are sufficient advantages in thin-walled generator linings to justify its careful study where greater capacity is urgent. Experience has proved the practicability of this type.

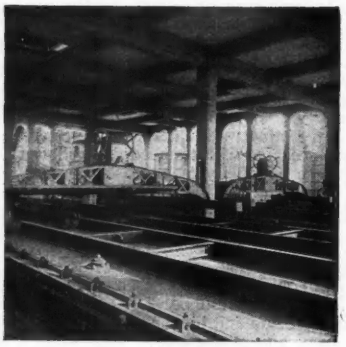
* From a Paper before the Joint Conference, Production and Chemical Committees, Technical Section, American Gas Association, May 25-26.

The Half-Yearly Report to June 30 of the Cork Gas Consumers Company states that the balance of profit and loss is £2,102, and as it is proposed to pay a dividend of 3% (actual), which will absorb £2,741 it will be necessary to draw £639 from reserve. In 1941 an interim of 4% was followed by a final of 3%.


"They love their land because it is their own
And scorn to give aught other reason why."
—Hallick
ALDER & MACKAY LTD of Edinburgh

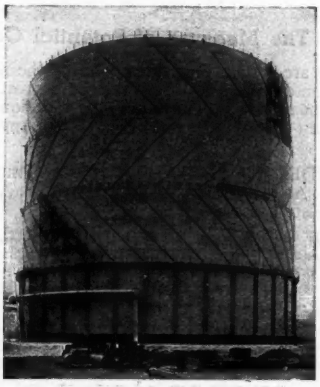
Craigallion and Dumgoyne, Stirlingshire (Photo: MacCulloch, Glasgow).

SAML CUTLER & SONS, LTD



39 VICTORIA ST.
WESTMINSTER
LONDON, S.W.1

TELEPHONE—ABBEY 3121
TELEPHONE—RETORTUS, SOWEST, LONDON



GASHOLDERS
PURIFIERS CONDENSERS RETORT HOUSE EQUIPMENT
STEEL TANKS FOR OIL STORAGE & GASHOLDER PURPOSES
COAL AND COKE HANDLING PLANTS

483

Gas Products Prices

The London Market Aug. 31.

The only change in the prices of Coal Tar Products in the London Market refers to 95/160 Solvent Naphtha, which is now about 2s. 3d. to 2s. 7d. per gallon.

The Provinces Aug. 31.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Coal tar, crude naphtha, in bulk, North, 1s. to 1s. 4d. according to quality. Solvent naphtha, naked, North, 2s. 2d. to 2s. 6d. Heavy naphtha, North, 1s. 10d. to 1s. 11d. Carbolic acid, 60's, controlled by the Coal Tar Acids Prices (Inland) Order, 1942, operative from May 1. Naphthalene, controlled by the Naphthalene prices (Inland) Order, 1942, dated April 15, 1942, and operative from May 1, 1942, £19 to £19 10s.—bags free. Anthracene, controlled by the Anthracene Prices (Inland) Order, 1942, operative from May 1. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d; timber preservation and other purposes 4¾d. to 6d. These prices apply as from May 13.

*In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland Aug. 29.

A strong demand continues for all products. Refined tar controlled. Value about 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¼d. to 7½d.; neutral oil, 6¾d. to 7d. per gallon; all *ex* Works in bulk. Cresylic acid is in good call at 3s. 6d. to 4s. 6d. per gallon *ex* Works, naked, according to quality. Crude naphtha 6½d. to 7d. Solvent naphtha: 90/160 grade, 2s. to 2s. 3d. and 90/190 Heavy Naphtha, 1s. 9d. to 2s. per gallon. Pyridine: 90/160 grade, 13s. and 90/140 grade, 15s. per gallon.

TRADE CARDS

FULL particulars of these spaces can be obtained on application to the Publishers. They are designed principally for the use of the firms whose display advertisements cannot be included owing to paper rationing.

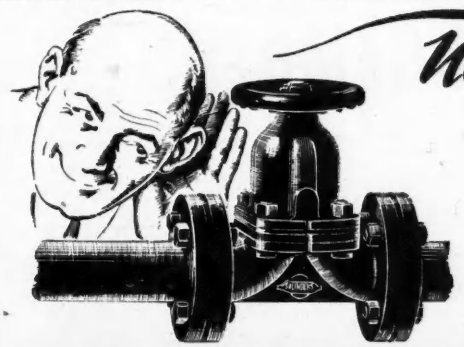
TOM CARRINGTON & CO. LTD.
Lyndon Toolworks, West Bromwich. T/N. 0517 (2 lines).
"LYNDON" and "EGA-KUT"
SCREWING TOOLS;
TAPS; DIES; STOCKS AND DIES;
GROUND THREAD TAPS

Arkon
INSTRUMENTS
Gas Flow Recorders and Indicators
Pressure and Vacuum Recorders and Indicators
Full Scale or Inclined Gauges
WALKER, CROSWELLER & CO. LTD.
CHELTENHAM, GLOS. Cheltenham 5172

SP Trade Mark
ENGINEERS BEARINGS
GREY IRON CASTINGS
FOR THE
GAS PRODUCTION TRADE
SAMUEL PLATT LTD.
KING'S HILL FOUNDRY, WEDNESBURY

GILLS PRESSURE CASTINGS
215, Tyburn Road, Birmingham, 24. T/N EASt 1008
Casters in
"MAZAK" ZINC BASE ALLOYS

MILNE'S METERS LTD.
Milton House Works, Edinburgh, and Victoria Road, Leeds.
METERS, PRESSURE GAUGES.



No fuel wasted here!

Leakage of compressed air or gases is sheer fuel waste. Going on day after day and month after month—often unsuspected—it may well amount to a gross and indictable waste under present conditions. A very large proportion of this preventable loss occurs at the valves. Both spindle leakage to atmosphere and leakage along the line when the valve is supposed to be closed are **entirely prevented** by SAUNDERS VALVES. You are urged to cut out this source of fuel waste in your works. Please write to-day for free technical literature showing how it is being done in hundreds of plants.

Issued in the interests of National Production by
SAUNDERS VALVE CO. LTD., CWMBRAN, NEWPORT 13, MON.

SAUNDERS DIAPHRAGM VALVES

TAS/Sv. 120.

60% Sulphur absorbed by our
OXIDE
which has stood the test of 60 years.
Minimum Costs, Highest Efficiency
ESTABLISHED 1873
GAS PURIFICATION & CHEMICAL COMPANY LIMITED
PALMERSTON HOUSE, 34, OLD BROAD STREET, LONDON, E.C.2.
Telegrams: "Purification, Stock, London." Telephone: London Wall 5077

PLANT, &c.

FIRTH BLAKELEY, SONS, & CO., LTD.
Vulcan Ironworks, Church Fenton, Tadcaster, Yorks.
MANUFACTURERS of Gasholders, Tanks, Condensers, Purifiers, Scrubbers, Washers, and every description of Gas Plant.
Sole Makers of the "P.M" semi-water Gas Plant.
Telegrams: "Blakeleys, Church Fenton."
Telephone: Barkston Ash 234 and 235 (Private Branch Exchange). Code: "Bentleys."

ROBERT DEMPSTER & SONS, LTD., ELLAND, Builders of CARBONIZING PLANTS, both Horizontal and Vertical. Manufacturers of CONDENSERS, PURIFIERS, GASHOLDERS, &c., also every description of COAL and COKE HANDLING PLANT. *Telegrams:* "Dempster, Elland." *Telephone:* Elland 2241, 2242 and 2243.

PATENTS

MEWBURN, ELLIS & CO.,
CHARTERED PATENT AGENTS
AND TRADE MARK AGENTS
70 & 72, Chancery Lane, London, W.C.2.
Telegrams: "Patent, London." 'Phone: Holborn 0437
And 3, St. Nicholas Buildings, Newcastle-on-Tyne.

PUBLICATIONS

GAS ACCOUNT CALCULATORS
SUPPLIED either by Price per Therm or Thousand, for any specified Calorific Value, in book form, office charts, or pocket charts for Meter Inspectors, printed in clear type. Write for particulars to F. H. WAKELIN, LTD., Calculator Specialists, 354, WHEELER STREET, BIRMINGHAM.
'Phone: Northern 0989. 'Grams: Reckoners, B'ham.

For every size of works and every class of coal...

WEST'S

CARBONIZING PLANTS

GLOVER-WEST VERTICALS

WESTVERTICAL CHAMBERS

440 carbonizing plants have been built or are under construction by West's in 24 countries. Working results from a wide variety of gas coals have established the high efficiency and adaptability of the West systems.

WEST'S

GAS IMPROVEMENT CO · LTD ·

MILES PLATTING MANCHESTER 10

TELEPHONE—COLLYHURST 2961-2-3-4-5 TELEGRAMS—STOKER, MANCHESTER

★ LONDON OFFICE: COLUMBIA HOUSE, ALDWYCH, W.C.2 TELEPHONE: HOLBORN 4108-9. TELEGRAMS: WESGASCO, ESTRAND.

Gas Stocks and Shares

The news of the Russian offensive and the position in the Solomons gave an impetus to stock markets towards the close of the week and the tone generally was firmer, although the volume of business remained small. Similar conditions prevailed in the Gas Market, where prices continued to be well maintained and the majority of movements in an upward direction. It will be seen that a further batch of stocks were marked *ex* the half-yearly dividend on Monday of last week, while the only reaction occurred in Liverpool ordinary with a drop of 2½ points. There is still a heavy demand for most of the fixed-interest stocks and they are usually difficult to obtain. A holding of Commercial 3% or 5% debenture stock should not be overlooked since both are somewhat undervalued and yield round about 5% and a similar return is also obtainable on Tottenham and Wandsworth preference stocks.

We have been unable to include the full table in this issue. It will appear next week.

OFFICIAL LIST

Associated Gas & Water Undertakings Ord.	16/6—17/6	+-/3d.
Barnet Ord. (x.d.)	125—130	Aug. 24
Croydon Sliding Scale (x.d.)	108—113	,,
Ditto max. Div. (x.d.)	83—88	,,
Imperial Continental Ord.	63—68	+1
Mid-Southern Utility Cons. (x.d.)	75—80	Aug. 24
Ditto 4 p.c. Pref. (x.d.)	78—83	,,
South-Eastern Gas Corporation Ord. (x.d.)	15/—17/-	,,
Ditto 4½ p.c. Pref. (x.d.)	16/—18/-	,,
Ditto 4 p.c. Pref. (x.d.)	12/6—14/6	,,
Uxbridge Ord. (x.d.)	102—107	,,

SUPPLEMENTARY LIST

Brighton 5 p.c. Deb.	107—112	+2
Croydon 4 p.c. Pref. (x.d.)	78—83	Aug. 24
Gas Consolidation "A" Ord.	12/6—14/6	+1/-
Mid-Southern Utility "A" Cons. (x.d.)	70—80	Aug. 24
North Middlesex 5 p.c. Pref. (x.d.)	90—95	,,
Tunbridge Wells Sliding Scale (x.d.)	119—124	,,

PROVINCIAL EXCHANGES

Blyth Ord. (x.d.)	100—105	Aug. 17
Glossop (x.d.)	18—19	,,
Ditto Half-Shares (x.d.)	9⅛—10½	,,
Ditto New Shares (x.d.)	13¼—14½	,,
Liverpool Ord.	100—102	−2½

BEST
IRISH BOG ORE

Prompt Despatch From
STOCK in LONDON For
Small Urgent Requirements

HARRISONS (LONDON) LTD.
66, MARK LANE, LONDON, E.C. 3
Telegrams: "BIRCHROCK, LONDON." Telephone: ROYal 3120

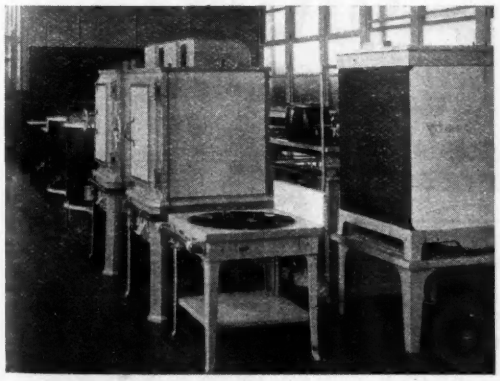
Limitation of Supplies—Heating Apparatus

The Limitation of Supplies Heating Apparatus and Polishes (No. 3) Order, 1942 (S.R.& O. 1942, No. 1511) is now available on ordering from any bookseller or newsagent, or direct from H.M. Stationery Office, York House, Kingsway, London, W.C. 2, price 1d. net (post free 2d.). As has already been announced, this Order allows the same rate of supply during the four months Aug. to Nov., 1942, as was allowed during June and July. Thus, during the four months, electric and gas space-heating apparatus may be supplied to the extent of 16-2/3% by value of the sales during the six months ended Nov. 30, 1939. The only space-heating apparatus controlled are types using gas or electricity.

Two amendments have been made in the Third Schedule of this Order.

(1) Heating apparatus may be supplied without restriction to hospitals belonging to local authorities (as well as voluntary hospitals and hospitals entered in the Hospitals Year Book, 1941) but may not be supplied to other departments of local authorities. Thus, supplies of heating apparatus to local authorities (other than to hospitals belonging to the local authorities) must be included in the supplier's quota, and supplies to such local authorities in the standard period should now be included in the standard period returns.

(2) Ships stores dealers have been taken out of the Third Schedule entirely, but unrestricted supply is allowed during the restriction period to the Merchant Navy Supply Association, Ltd.



Many of the large mills in the North of England are now being equipped with canteens by Radiation, Ltd. Our photograph is of a recent installation which has already proved satisfactory in every respect. The apparatus includes one "Chester" range, one large roasting oven, two steamers, two 25-gallon "Lune" boilers, one "Wardour" fish fryer, one stockpot stand and stockpot, one 12 ft. hotcloset, and one "G.B." water heater. In addition, potato peelers, mixing machines, and all other accessory equipment was supplied.

A **Meeting** of the Institution Gas Installations Committee has been called for Sept. 17, 10 a.m., at Gas Industry House.

"Technical Data on Fuel"

The second impression of the Fourth Edition of *Technical Data on Fuel* was exhausted several months ago, and it has recently been impossible to obtain copies of this standard work. A Third Impression has now been published by the British National Committee of the World Power Conference, and copies can again be obtained from Mr. M. W. Burt, Manager and Secretary, Society of British Gas Industries, Uplands, Epsom Road, Guildford, Surrey. The price remains unchanged at 12s. 6d. net (postage 6d.).

The opportunity has been taken by the Editor, Mr. H. M. Spiers, to make a few corrections.

A new edition of *Technical Data on Fuel* is in preparation. This, the Fifth Edition, will, it is hoped, be published by the British National Committee of the World Power Conference in about a year's time.

The South-Eastern Gas Corporation, Ltd., has declared an interim dividend of 1½% actual, less tax, in respect of the year ending March 31, 1943 (same).

Westminster Technical Institute evening classes are recommencing, intending students being advised to call during the week beginning Aug. 31. Tentative arrangements, subject to alteration and amendment if necessary, have been made for Gas Fitting Practical, Thursdays 6–8, and Gas Fitting Theory, Wednesdays 6–8.

The Wales and Monmouthshire Association is to meet in Swansea on Sept. 10, under the Presidency of Mr. J. F. Rust. A Paper entitled "War Time Miscellany" will be presented by Mr. J. Powdrill, and discussed.

Alliance and Dublin Consumers Gas Company is to pay a dividend of 2½% on the Consolidated Ordinary Stock for the half-year ended June 30, 1942. This involves the withdrawal of £22,092 from reserve. Similar payments were made in each of the two previous half-years. For the whole of 1941 the total was 5%, against 6½% for 1940.

A New Leaflet on W. W-D. Electro-detarrers has been issued by the Whessoe Foundry and Engineering Co., Ltd., and will be sent to anybody interested on application to the London Area Office, Lanes Offices, Potten End, Berkhamsted, Herts, or the Firm's head office, Darlington.

The 44th Annual General Meeting of the Manchester and District Junior Gas Association will be held at the Engineers' Club, Manchester, on Oct. 3. Mr. E. V. Evans, O.B.E., President of the I.G.E., will open a confidential discussion on the work of the Gas Research Board and certain future problems of the Gas Industry.

Damages of £1,000 were awarded Mrs. Margaret Graham, of Perth, in an action against Perth Town Council, whom she sued for £1,500 in respect of the death of her husband, Andrew Graham, from gas poisoning during the night of Dec. 27, 1940. A vehicle, which was never traced, knocked down a lamp standard outside the Grahams' house, and gas leaked into his bedroom. The Sheriff found that the joint at the base of the standard was dislodged by accident during the black-out, and the workman who examined the place said he knew, if there was a leak, gas would be likely to creep under the pavement into the Grahams' house, but he tested for a surface leak, and finding none, went away. As he accepted the risk, his employers must accept the consequences. The Sheriff stated that the workman might even have taken the precaution, if the inconvenience of excavating in the black-out was unreasonably great, of warning people in adjoining houses so that they could take steps to avoid fatal consequences, but no such warning was given.

Meter and Governor Leathers

DIAPHRAGM'S DEPENDABLE DIAPHRAGMS

have been supplied to all parts of the World since 1847

Cutting-Out Shop where the best part of the skins are cut up by highly skilled men.

Products of the "All-Gas-Powered" Works

The Diaphragm & General Leather Co., Ltd.

Franklin Road Works, PORTSLADE, SUSSEX

FOUR OAKS

FOR LABOUR-SAVING AND EFFICIENT SPRAYING

These sprayers are both labour-saving and effective in performance. They have proved themselves in many gas undertakings, and gas engineers using them consider they are all that we claim for them. Specialising in spraying apparatus, our wide range of productions includes machines for white-washing, disinfecting, creosoting and paint spraying. Tell us your spraying problem—our long experience can help you.

The
"FOUR OAKS" Gold Medal "Bridgwater" Pattern

The special feature of this pump is that the pump bucket works entirely outside the liquid.

18 Gallons, £20 2 6

Other patterns of smaller capacity and lower prices.

Above price plus 10% advance. Owing to the National Emergency all prices are subject to conditions prevailing at the time orders are received.

THE FOUR OAKS SPRAYING MACHINE CO.,
FOUR OAKS WORKS · FOUR OAKS · BIRMINGHAM.

Telegrams: "SPRAYER, FOUR OAKS." *Telephone: FOUR OAKS 305.*

CONTENTS

EDITORIAL NOTES

Is It Succeeding? 383
Gas Charges 383
Declared Calorific Value 384
Fuel-Saving Exhibitions 384
The Gas Industry of the Future.—5 .. 385

The Structure and Finance of the Two-Part Tariff. By A. F. Pollock, M.A., B.Com., C.A. 389

"Specification," 1942 391

Welding Research 391

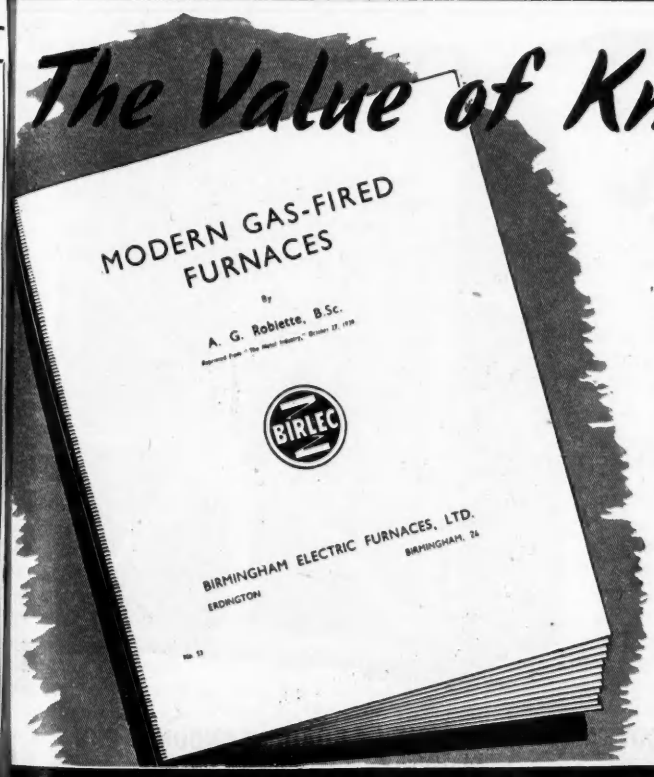
Gas Products and Prices 393

Gas Stocks and Shares 397

Stock and Share List 397

THIS WEEK'S ADVERTISERS

	PAGE
Adler & Mackay, Ltd.	398
Ascot Gas Water Heaters, Ltd.	Cover I
Ashworth & Parker, Ltd.	398
Baile & Church, Ltd.	401
Birmingham Electric Furnaces, Ltd.	381
Blakeley, Firth, Sons & Co., Ltd.	401
Brett Colbran, Ltd.	371
British Fittings Co. (Hendon) Ltd.	378
Caseside Engineering Co., Ltd.	373
Chapham Bros., Ltd.	400
Clarke, Cluley & Co., Ltd. ...	372
Cochran & Co., Annan, Ltd. ...	375
Cowan, W. & B.	Cover III
Curtis, A. L.	399
Dempster, Robert, & Sons, Ltd.	401
Donkin Co., Ltd. (The Brayn)	Cover II
Dunlop Insulations, Ltd.	401
Evans, Joseph, & Sons (Wolverhampton), Ltd.	Cover II
Fluxite, Ltd.	402
Frost, A. E.	401
Gas Purification and Chemical Co., Ltd.	401
Glover, George, & Co., Ltd. ...	369
Glover, Thos., & Co., Ltd. ...	382
Goodall, Clayton & Co., Ltd. ...	399
Grant, David, & Co.	370
Green & Boulding, Ltd.	401
Harrisons (London), Ltd.	402
Holden & Brooke, Ltd.	399
Holmes, W. C., & Co., Ltd. ...	403
Horstmann Gear Co., Ltd. ...	378
Humphreys & Glasgow, Ltd. ...	380
Hyde, Silas, Ltd.	374
Jeavons, E. E., & Co., Ltd. ...	401
Keith Blackman, Ltd.	404
King's Patent Agency, Ltd. ...	401
Londex, Ltd.	399
Macpherson, Donald & Co., Ltd. ...	372
Main, R. & A., Ltd.	396
Manchester Oxide Co., Ltd. ...	377
Mavitta Drafting Machines, Ltd.	378
Menno Compressed Air Greasecup Co., Ltd.	401
Mewburn, Ellis & Co.	401
Mitchell, H., & Co.	378
Morton, Joseph, Ltd. ...	Cover IV
Newton Chambers & Co., Ltd.	388
Parkinson, W., & Co.	382
Peckett & Sons, Ltd.	401
Pulsometer Engineering Co., Ltd.	Cover IV
Radiation, Ltd.	394, 395
Rawlplug Co., Ltd.	374
Reavell & Co., Ltd.	401
Sawer & Purves, Ltd.	392
Siebe Gorman & Co., Ltd. ...	399
Simon-Carves, Ltd.	376
Slingsby, Walter, & Co., Ltd. ...	399
Stanton Ironworks, Ltd.	402
Stoves, Ltd....	379
Strachan & Henshaw, Ltd. ...	369
Sutcliffe, Speakman & Co., Ltd.	379
Thomas & Bishop, Ltd.	393
Trotter, Haines & Corbett, Ltd.	402
Turbine Furnace Co., Ltd. ...	372
Underpressure Engineering Co., Ltd.	370
Walker, C. & W., Ltd.	392
Walker, James, & Co., Ltd.	Cover IV
Woodall-Duckham Co., Ltd. ...	387
Trade Cards	393
Appointments Vacant	402
Patents	401
Plant, &c.	401
Plant, &c., For Sale and Wanted	402



The Value of Knowing HOW

"Once a man has established a certain principle, the best testimony to its worth is its adaptability to the most widely divergent design and usage."

Precisely—and it's in the exclusive proved principles of BIRLEC Furnace design that gas—as a fuel—can provide many features in Heat Treatment which were once thought "exclusively electric."

BIRLEC Gas-Fired Furnaces mark a new epoch in the extension of the use of Industrial Gas to a far wider range of purposes and limits of heat control.

Write for our Booklet on "Modern Gas-Fired Furnaces."

BIRLEC

BIRMINGHAM ELECTRIC FURNACES LTD
ERDINGTON BIRMINGHAM

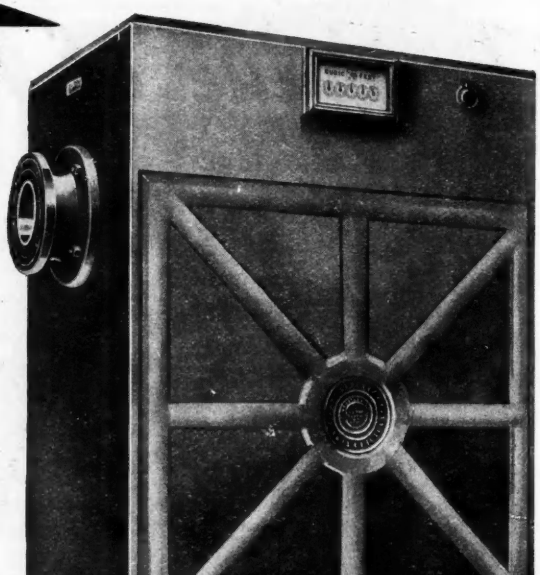
The Point of Attraction

THOMAS GLOVER & CO. LTD

EDMONTON. LONDON. N.18 and BRANCHE

PARKINSON

INDUSTRIAL METERS



W. PARKINSON & Co COTTAGE LANE, CITY ROAD, LONDON, E.C.1

(Incorporated in Parkinson & Cowan (Gas Meters) Ltd.)

Also at Birmingham and Belfast

P. 8